

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : ROSE, K.
Appl. No. : 10/572,908
Filed : October 2, 2006
Title : PRESSURE VESSEL ASSEMBLY FOR INTEGRATED
PRESSURIZED FLUID SYSTEM
Group Art Unit : 3744
Examiner : DUONG, T.
Docket No. : 8411.1120

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

March 23, 2011

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In follow-up to the Notice of Appeal filed February 14, 2011, Appellant respectfully requests the Board of Patent Appeals and Interferences consider the following arguments and reverse the decision of the Examiner in whole.

Applicant has filed concurrently herewith an amendment intended to place the application in better form for consideration on Appeal.

The Commissioner is hereby authorized to charge applicant's deposition account no. 50-0548 for any fees necessary to maintain the pendency of this application.

(1) Real Party in Interest

The real party in interest is BOSCH REXROTH CORPORATION (hereinafter referred to as "BOSCH REXROTH").

(2) Related Appeals and Interferences

There are no known related appeals or interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal.

(3) STATUS OF CLAIMS

1. Claims 1, 3-5, 8-10, 13, 15, 25-28 and 32-38 are pending in the application.
2. Claims 2, 6-7, 11-12, 14, 16-24 and 29-31 have been canceled.
3. Claims 35-38 have been allowed.
4. Claim 34 has been objected to.
5. Claims 1, 3-5, 8-10, 13, 15, 25-28 and 32-34 have been rejected and are being appealed.

(4) STATUS OF AMENDMENT

The Office Action finally rejecting claims 1, 3-5, 8-10, 13, 15 and 25-33 and objecting to claims 34-35 was mailed on December 9, 2010. On January 6, 2011 Appellant filed an Amendment and Request for Reconsideration rewriting claim 35 in independent form, canceling claims 29-31, adding new claims 36-38 identical to claims 29-31 but dependent upon the base claim 35, and presenting arguments for the patentability of claims 1, 3-5, 8-10, 13, 15, 25-28 and 32-34. On January 25, 2011 the Examiner issued an Advisory Action Before the Filing of an Appeal Brief indicating that the Amendment and Request for Reconsideration of January 6, 2011 has been considered by the Examiner but does not place the application in condition for allowance. The Examiner also indicated that the proposed amendment had been entered and considered. The Examiner allowed claims 35-38 but maintained the rejection of claims 1, 3-5, 8-10, 13, 15, 25-28, 32, 33 and objection to claim 34. On February 14, 2011 Appellant filed a Notice of Appeal. Subsequently, there have been no other papers filed by the Appellant or issued by the U.S. PTO.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The instant invention, as claimed in independent claim 1, is directed to a pressure vessel assembly (10) for a pressurized fluid system (1) (see Figs. 1-5; page 5, lines 6-10 of the specification). The pressure vessel assembly (10) comprises an enclosed outer casing (12) (see Figs. 2-5; page 6, lines 14-21), at least one internal tube (18) extending within the outer casing (12) (see Figs. 2-7; page 7, lines 4-15), at least one hydraulic fluid accumulator (20) disposed within the at least one internal tube (18) with a clearance (see Figs. 2 and 6; page 7, lines 5-13), and at least one cooling passage provided adjacent to the at least one hydraulic fluid accumulator for receiving a flow of a cooling fluid therethrough for cooling the at least one hydraulic fluid accumulator (20) (see Figs. 1, 2 and 6; page 7, lines 8-12). The cooling passage is formed within the internal tube (18) and is defined by the clearance between the internal tube (18) and the hydraulic fluid accumulator (20) (see Figs. 1, 2 and 6; page 7, lines 8-12 of the specification).

According to claim 8 dependent upon claim 1, the pressure vessel assembly (10) further comprises at least one spiral wrapping (26) between the internal tube (18) and the hydraulic fluid accumulator (20) (see Figs. 2 and 6; page 9, lines 11-14). The spiral wrapping (26) directs the flow of the cooling fluid through the cooling passage for increasing heat transfer from the hydraulic fluid accumulator (20) to the cooling fluid (see Figs. 2 and 6; page 9, lines 2-10 and 14-22 of the specification).

According to claim 9 dependent upon claim 8, the spiral wrapping (26) is made of an elastomeric material (see Figs. 2 and 6; page 9, line 1 – page 10, line 2).

The instant invention, as claimed in independent claim 26, is directed to a pressure vessel assembly (10) for a pressurized fluid system (1) (see Figs. 1-5; page 5, lines 6-10 of the specification). The pressure vessel assembly (10) comprises an enclosed outer casing (12) (see Figs. 2-5; page 6, lines 14-21), at least one hydraulic fluid accumulator (20) disposed within the outer casing (12) (see Figs. 2-5; page 7, lines 4-8), a compartment (11) within the pressure vessel assembly (10) between the outer casing (12) and the at least one hydraulic fluid accumulator (20) (see Figs. 1 and 2; page 5, lines 18-21; page 6, line 22 - page 7, line 3; and page 7, lines 18-20), and a pressurized gas reservoir (6) external to the outer casing (12) (see Fig. 1; page 6, lines 4-6). The compartment (11) is at least partially filled with a hydraulic working fluid (17) (see Fig. 1; page 5, lines 18-21). Moreover, the compartment (11) is in fluid communication with the hydraulic fluid accumulator (20) so as to selectively transfer the hydraulic working fluid (17) between the compartment (11) and the hydraulic fluid accumulator (20) (see Fig. 1; page 6, lines 1-3 and 8-13). Furthermore, the pressurized gas reservoir (6) is in fluid communication with the compartment (11) within the outer casing (12) for pressurizing the hydraulic working fluid (17) within the compartment (11) in the outer casing (12) (see Fig. 1; page 6, lines 4-8).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3-5, 8, 13, 15 and 25 stand rejected under 35 U.S.C 102(b) as being anticipated by Carter (US 2,847,193) (hereinafter referred to as Carter). Claims 1, 3-5, 10, 15 and 25 stand rejected under 35 U.S.C 102(b) as being anticipated by Dalin (US 2,822,136) (hereinafter referred to as Dalin). Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Carter in view of Rains (US 5,127,441) (hereinafter referred to as Rains). Claims 8-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dalin in view of Rains. Claims 26-28, 32 and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Michel (US 4,520,840) (hereinafter referred to as Michel) in view of Carlson (US 4,380,150) (hereinafter referred to as Carlson).

(7) ARGUMENTS

Rejection under 35 U.S.C. 102(b) over Carter

Claims 1, 3-5, 8, 13, 15 and 25 stand rejected under 35 U.S.C 102(b) as being anticipated by Carter. It is noted that claim 1 is independent claims. It is also noted that claims 3-5, 8, 13, 15 and 25 depend upon the base claim 1.

The Examiner alleges that Carter discloses all the limitations of claim 1. Specifically, the Examiner erroneously interprets the concentric tubes 1 and 2 of Carter, which form a

water passage therebetween and an air space 35 inside the tube 1 (see Fig. 2 of Carter), as a hydraulic fluid accumulator.

While recognizing that the pending claims must be given their broadest reasonable interpretation consistent with the specification, we trust that that the broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach, as stated in MPEP § 2111. Also, the words of the claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. MPEP § 2111.01.

The term “hydraulic fluid accumulator” has a well-established definition in the art as a rechargeable hydraulic energy storage device. Those skilled in the art would readily recognize that the hydraulic fluid accumulator is a pressure storage reservoir in which a non-compressible hydraulic fluid is held under pressure by an external force in a rigid shell (or container). That external source can be a spring, a compressed gas, or a raised weight. In modern, often mobile, hydraulic systems the preferred item is a gas-charged, or hydro-pneumatic, accumulator, but simple systems may be spring-loaded. The hydro-pneumatic accumulators, for example, include an expandable bladder, diaphragm or piston that separates a compressed gas from hydraulic fluid.

Moreover, the term “accumulator” is defined by the Dictionary.com (Unabridged. Based on the Random House Dictionary, © Random House, Inc. 2010.), as “*Hydraulics*. a vessel in which air is trapped and compressed by the liquid, thus storing energy to supply liquid under pressure when the demand of the system is greater than the capacity of the pump” (emphasis added). Furthermore, the term “accumulator” is defined by the “Dictionary of Automotive Engineering” (Second Edition 1995 by Don Goodsell, CEng, MIMechE,

MSAE, Society of Automotive Engineers, Inc., Warrendale, PA) as “(1) Rechargeable electric storage battery. (Obsolescent) (2) A hydraulic accumulator for storing hydraulic pressure” (emphasis added).

Contrary to the well-established definition in the art recited above, the Examiner stated in the Advisory Action of January 25, 2011 that the hydraulic fluid accumulator is interpreted as “any holding device that is capable of containing a hydraulic fluid”. Thus, if we follow the Examiner’s line of reasoning, any vessel or container, such as fuel tank, bath tub, coffee mug, etc., is a hydraulic fluid accumulator. Clearly, those skilled in the art would not possibly interpret the bath tub, for example, which does not contain liquid under pressure, as a hydraulic fluid accumulator. Therefore, the Examiner’s assumption that any holding device that is capable of containing a hydraulic fluid can be interpreted as a hydraulic fluid accumulator is erroneous and contrary to the plain, ordinary and customary meaning of a term “hydraulic fluid accumulator” and is inconsistent with the specification.

Accordingly, those skilled in the art would not possibly interpret the concentric tubes 1 and 2 of Carter as hydraulic fluid accumulator, as the water in the passage between the concentric tubes 1 and 2 cannot be stored under pressure by the air in the air space 35 for future use. Carter clearly discloses that the air in the air space 35 does not interact with the water in the passage between the concentric tubes 1 and 2, and notes that “it is of incidental importance whether or not tube 1 is tightly sealed at the ends as neither water nor air in space 35 affects the operation of the exchanger) (see col. 2, lines 35-38 of Carter).

Contrary to the Examiner’s allegations, Carter discloses a heat exchanger for heating coating material in the passage between the tubes 2 and 3 by the hot water in the hot water passages between the tubes 1-2 and 3-4, not the pressure vessel assembly comprising a

hydraulic fluid accumulator and at least one cooling passage provided adjacent to the hydraulic fluid accumulator for receiving a flow of a cooling fluid therethrough for cooling the hydraulic fluid accumulator, as recited in claim 1.

Anticipation under Section 102 requires that a prior art reference disclose every claim element of the claimed invention. *E.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1574, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986). Anticipation must be found in a single reference. *E.g., Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 726 F.2d 724, 726-27, 220 U.S.P.Q. 841 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. *E.g., Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 U.S.P.Q. 1264 (Fed. Cir. 1984).

Therefore, Applicant respectfully submits that the applied document, *i.e.*, the ‘193 patent to Carter, does not meet this standard of anticipation. Accordingly, for this reason alone, the rejection of claims 1, 3-5, 8, 13, 15 and 25 under U.S.C. 102(b) over Carter is improper.

Rejection under 35 U.S.C. 102(b) over Dalin

Claims 1, 3-5, 10, 15 and 25 stand rejected under 35 U.S.C 102(b) as being anticipated by Carter. It is noted that claim 1 is independent claims. It is also noted that claims 3-5, 10, 15 and 25 depend upon the base claim 1.

The Examiner alleges that Dalin discloses all the limitations of claim 1. Specifically, the Examiner erroneously interprets the water tank 9 of Dalin (see Figs. 1-3 and col. 3, lines

23-27 of Dalin) as a hydraulic fluid accumulator. Moreover, the Examiner erroneously interprets the air passage 18 of the combustion chamber 5 (provided for heating water in the water tank 9) as a cooling passage provided for cooling the hydraulic fluid accumulator. Furthermore, the Examiner erroneously interprets the term “hydraulic fluid accumulator” “any holding device that is capable of containing a hydraulic fluid” contrary to the well-established definition in the art.

As argued above regarding the patentability of claim 1 over Carter, the term “hydraulic fluid accumulator” is commonly defined in the art as a rechargeable hydraulic energy storage device. For example, the term “accumulator” is defined by the Dictionary.com (Unabridged. Based on the Random House Dictionary, © Random House, Inc. 2010.), as “*Hydraulics.* a vessel in which air is trapped and compressed by the liquid, thus storing energy to supply liquid under pressure when the demand of the system is greater than the capacity of the pump” (emphasis added) and by the “Dictionary of Automotive Engineering” (Second Edition 1995 by Don Goodsell, CEng, MIMechE, MSAE, Society of Automotive Engineers, Inc., Warrendale, PA) as “(1) Rechargeable electric storage battery. (Obsolescent) (2) A hydraulic accumulator for storing hydraulic pressure” (emphasis added). Thus, those skilled in the art would readily recognize that the hydraulic fluid accumulator is a pressure storage reservoir in which a non-compressible hydraulic fluid is held under pressure by an external force in a rigid shell (or container).

Accordingly, Applicant believes that those skilled in the art would not possibly interpret the water tank 9 of Dalin as the hydraulic fluid accumulator, as the water in the water tank 9 cannot be stored under pressure by the air or any other means for future use. Dalin

clearly discloses that the water in the water tank 9 is simply a vessel heated by the hot air generated by the combustion chamber 5 and flowing through the air passage 18.

Contrary to the Examiner's allegations, Dalin discloses a combined hot air furnace and domestic water heater for heating both air and water, not the pressure vessel assembly comprising a hydraulic fluid accumulator and at least one cooling passage provided adjacent to the hydraulic fluid accumulator for receiving a flow of a cooling fluid therethrough for cooling the hydraulic fluid accumulator, as recited in claim 1.

Therefore, Applicant respectfully submits that the applied document, *i.e.*, the '136 patent to Dalin, does not meet this standard of anticipation. Accordingly, for this reason alone, the rejection of claims 1, 3-5, 10, 15 and 25 under U.S.C. 102(b) over Dalin is improper.

Rejection under 35 U.S.C. 103(a) over Carter in view of Rains

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Carter in view of Rains. It is noted that claim 9 depends upon the base claim 1.

The Examiner erroneously alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the spiral wrapping (12) of Rains made of resilient material in the Carter's heat exchanger for a purpose of providing an alternative material for the spiral wrapping that is suitable for whatever liquid or gas are transported through the system.

As stated in the Supreme Court decision of *KSR Int'l Co. v. Teleflex Inc.*: “ patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” (emphasis added). *KSR v. Teflex*, 550 U.S. ___, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007). Moreover, under *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007), the burden is on the Examiner to make an explicit analysis to support of an obviousness rejection. *KSR*, 82 USPQ2d at 1389 (“[t]o facilitate review, this [obviousness] analysis should be made explicit”).

In addition to the above arguments regarding the patentability of claim 1 over Carter, those skilled in the art would readily realize that the spiral wrapping made of resilient material is not appropriate material in a heated environment of the heat exchanger of Carter, because it is well known in the art that resilient material quickly deteriorates when subjected to heat. For this reason, the spiral wrapping in the Carter's heat exchanger is made of steel (see col. 2, lines 39-41 of Carter). Thus, the Examiner fails to explain the reasoning that leads to a legal conclusion of obviousness when rejecting claims on that ground. Clearly, the prior art provides no logical reason, suggestion or motivation to combine teachings of Carter and Rains.

Rejection under 35 U.S.C. 103(a) over Dalin in view of Rains

Claims 8-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dalin in view of Rains. It is noted that claims 8 and 9 depend upon the base claim 1.

The Examiner erroneously alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the spiral wrapping (12) of Rains made of resilient material in the Dalin's the domestic water heater.

In addition to the above arguments regarding the patentability of claim 1 over Dalin, those skilled in the art would readily realize that the spiral wrapping made of resilient material is not appropriate material in a heated environment of the combined hot air furnace and water heater of Dalin (that includes the combustion chamber 5) because it is well known in the art that resilient material quickly deteriorates when subjected to heat.

Those skilled in the art would realize that if, for the sake of arguments, the combination of and modification of Dalin and Rains suggested by the Examiner is made by placing the spiral wrapping (12) of Rains made of resilient material in the hot air passage 18 of Dalin supplied with the hot air from the furnace (the combustion chamber 5), the resilient spiral wrapping in the hot air passage 18 would quickly melt and/or burn.

Thus, the Examiner fails to explain the reasoning that leads to a legal conclusion of obviousness when rejecting claims on that ground. Clearly, the prior art provides no logical reason, suggestion or motivation to combine teachings of Dalin and Rains.

Rejection under 35 U.S.C. 103(a) over Michel in view of Carlson

Claims 26-28, 32 and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Michel in view of Carlson. It is noted that claim 26 is independent claims. It is also noted that claims 27, 28, 32 and 33 depend upon the base claim 26.

The Examiner alleges that Michel discloses all the elements of the above-referenced invention as recited in the claim 26 except the working fluid of the system being hydraulic oil.

First, the Examiner erroneously interprets the atmosphere or feed pump in Michel as a pressurized gas reservoir external to the outer casing. While recognizing that the pending claims must be given their broadest reasonable interpretation consistent with the specification, we trust that the broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach, as stated in MPEP § 2111.

Also, the words of the claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. MPEP § 2111.01. Those skilled in the art would not possibly interpret the “atmosphere” (commonly defined as “the gaseous envelope surrounding the earth; the air”) as a pressurized gas reservoir. As for the “feed pump”, the feed pump 21 of Michel is a hydraulic pump, which cannot possibly be interpreted by those skilled in the art as a pressurized gas reservoir.

Therefore, even if the combination of and modification of Michel and Carlson suggested by the Examiner could be made, the resulting hydro-pneumatic energy system still would lack the pressurized gas reservoir external to the outer casing, and being in fluid

communication with the compartment within the outer casing for pressurizing the hydraulic working fluid within the outer casing.

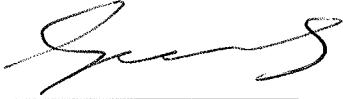
Second, MPEP 2141.01(a) specifically states that in order to rely on a reference as a basis for rejection of an applicant's invention under 35 U.S.C. 103, the reference must be in the field of applicant's endeavor or be reasonably pertinent, i.e. it must be analogous prior art. Clearly, Carlson that discloses the invention related to power units actuated hydraulically and more particularly to hydraulically actuated fluid pumps (Class 60: POWER PLANTS) is not analogous to the claimed invention that recites a pressure vessel assembly including a hydraulic fluid accumulator.

Therefore, the rejection of claims 26-28, 32 and 33 under 35 U.S.C. 103(a) over Michel and Carlson is improper.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance, and notice to that effect is earnestly solicited. Appellant will request an oral hearing on the merits within two months after the date of the Examiner's answer.

Respectfully submitted:
Berenato & White, LLC

By:


George Ayvazov
Reg. No. 37,483

6550 Rock Spring Drive, Ste 240
Bethesda, Maryland 20817
Tel. 301-896-0600
Fax 301-896-0607

(8) APPENDIX OF CLAIMS ON APPEAL

1. A pressure vessel assembly for a pressurized fluid system, said pressure vessel assembly comprising:

an enclosed outer casing;

at least one internal tube extending within said outer casing;

at least one hydraulic fluid accumulator disposed within said at least one internal tube with a clearance; and

at least one cooling passage provided adjacent to said at least one hydraulic fluid accumulator for receiving a flow of a cooling fluid therethrough for cooling said at least one hydraulic fluid accumulator;

said at least one cooling passage formed within said at least one internal tube and defined by said clearance between said at least one internal tube and said at least one hydraulic fluid accumulator.

3. The pressure vessel assembly as defined in claim 1, wherein said outer casing includes a substantially tubular housing and end members secured at opposite distal ends of said housing.

4. The pressure vessel assembly as defined in claim 3, wherein said at least one internal tube extends between said end members.

5. The pressure vessel assembly as defined in claim 3, wherein said at least one internal tube extends through said end members

8. The pressure vessel assembly as defined in claim 1, further including at least one spiral wrapping between said at least one internal tube and said at least one hydraulic fluid accumulator, said at least one spiral wrapping directs said flow of said cooling fluid through said cooling passage for increasing heat transfer from said at least one hydraulic fluid accumulator to said cooling fluid.

9. The pressure vessel assembly as defined in claim 8, wherein said at least one spiral wrapping is made of an elastomeric material.

10. The pressure vessel assembly as defined in claim 1, wherein said pressurized fluid system includes a cooling fan providing a forced air flow through said at least one cooling passage.

13. The pressure vessel assembly as defined in claim 1, wherein said pressure vessel assembly defines a compartment therewithin between said outer casing and said at least one internal tube, said compartment at least partially filled with a hydraulic working fluid.

15. The pressure vessel assembly as defined in claim 3, wherein said tubular housing is substantially cylindrical in shape.

25. The pressure vessel assembly as defined in claim 1, wherein said at least one hydraulic fluid accumulator is a hydro-pneumatic accumulator.

26. A pressure vessel assembly for a pressurized fluid system, said pressure vessel assembly comprising:

an enclosed outer casing;

at least one hydraulic fluid accumulator disposed within said outer casing;

a compartment within said pressure vessel assembly between said outer casing and said at least one hydraulic fluid accumulator, said compartment at least partially filled with a hydraulic working fluid;

said compartment being in fluid communication with said at least one hydraulic fluid accumulator so as to selectively transfer said hydraulic working fluid between said compartment and said at least one hydraulic fluid accumulator; and

a pressurized gas reservoir external to said outer casing, said pressurized gas reservoir being in fluid communication with said compartment within said outer casing for pressurizing said hydraulic working fluid within said compartment in said outer casing.

27. The pressure vessel assembly as defined in claim 26, wherein said compartment includes at least one internal baffle.

28. The pressure vessel assembly as defined in claim 26, wherein said hydraulic working fluid is oil.

32. The pressure vessel assembly as defined in claim 26, wherein said outer casing includes at least one internal baffle.

33. The pressure vessel assembly as defined in claim 26, wherein said pressurized fluid system includes a hydraulic machine having a first port fluidly connected to said at least one hydraulic fluid accumulator and a second port fluidly connected to working fluid in said compartment.

34. The pressure vessel assembly as defined in claim 13, wherein said compartment is in fluid communication with said at least one hydraulic fluid accumulator so as to selectively transfer said working fluid between said compartment and said at least one hydraulic fluid accumulator; wherein said pressure vessel assembly further comprises a pressurized gas reservoir external to said outer casing; and wherein said pressurized gas reservoir is in fluid communication with said compartment within said outer casing for pressurizing said working fluid within said compartment in said outer casing.

(9) EVIDENCE APPENDIX

Not applicable

(10) RELATED PROCEEDINGS APPENDIX

Not applicable